

3.0 BAKERSFIELD-TO-LOS ANGELES CORRIDOR

The initial analysis for the Bakersfield-to-Los Angeles Corridor was conducted for the following segments:

- Bakersfield-to-Sylmar
- Sylmar-to-Los Angeles

The alignment and station location options within these segments are illustrated in Figure 3-1.

3.1 Bakersfield-to-Sylmar

3.1.1 Alignment and Station Location Options for Further Evaluation

Based on information obtained through the initial evaluation the following alignment and station location options are recommended for further evaluation (see Figure 3-2):

Alignments:

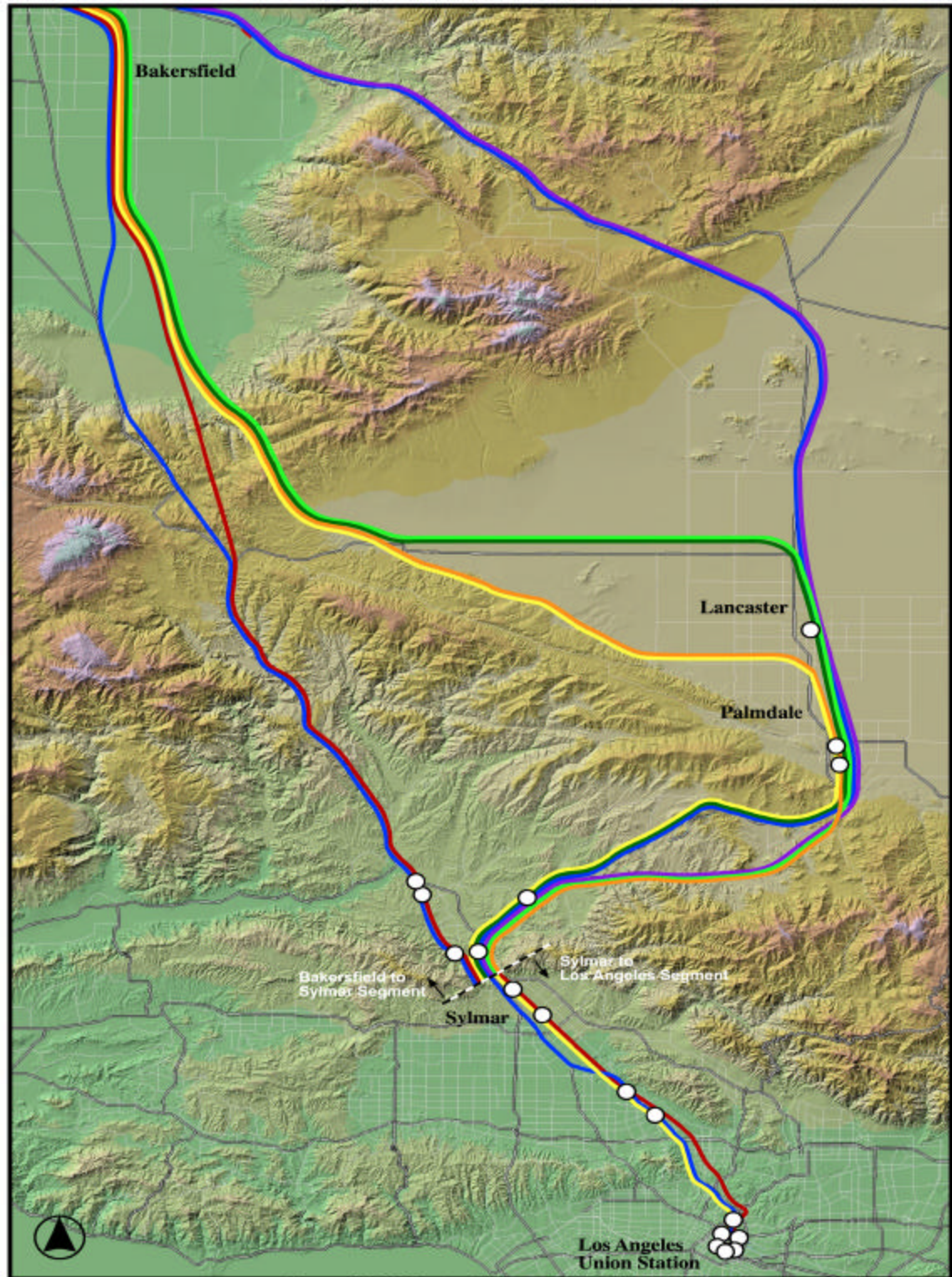
- **I-5 (3.5% maximum grade):** This alignment extends east along the Union Pacific Railroad (UPRR) from a Bakersfield station, south along State Route 184 (SR-184)/Wheeler Ridge Road, and generally follows I-5 over the Tehachapi Mountains through Santa Clarita to Sylmar.

The I-5 alignment has the most direct route from Bakersfield to Sylmar offering the best travel time for intercity trips with the highest ridership potential. Based on the information derived from the tunneling workshop as well as the alignment optimization from Quantm a portion of the original alignment was diverted slightly to the east to facilitate the crossing of both major fault zones (San Andreas and Garlock) at-grade with a total of 18 miles of tunneling with a maximum tunnel length of 6 miles. Further environmental analysis will need to be conducted on this I-5 variation to assess its viability. There is concern that the Garlock Fault crossing in the floodplain west of Castac lake will create significant biological impacts. This area needs to be surveyed.

The Quantm system also identified a western variation of the original I-5 alignment, which crosses one major fault (San Andreas) in a tunnel. If the eastern alignment were to be determined infeasible the western alignment as well as the original alignment should be investigated further. The minor eastern and western divergences of the original alignment would not impact the operations or travel times of the I-5 alignment.

- **SR-58/Soledad Canyon (3.5% maximum grade):** This alignment extends from Bakersfield along State Route 58 (SR-58) east from Bakersfield, generally following SR-58 through the Tehachapis to Mojave, along Metrolink/UPRR through Antelope Valley and Soledad Canyon and generally following State Route 14 (SR-14) from Santa Clarita to Sylmar.

The SR-58/Soledad Canyon alternative at 3.5% maximum grade minimizes the tunneling (10.1 miles of total tunneling) and capital costs and allows the alignment to cross both the San Andreas and Garlock Faults at grade. This alignment generally follows existing highway and/or railroad rights-of-way, presenting fewer concerns with respect to development and adjacent land use, and offering the best construction access. This alignment has very low potential to impact cultural resources and has the potential to serve the growing communities of the Antelope Valley. The Quantm system produced a variation of the Soledad Canyon alignment that maybe considered in order to reduce impacting potentially sensitive ecological areas.



Source: USGS 30 meter DEM mosaic; USGS 1:100,000 DLGs

June 12, 2001

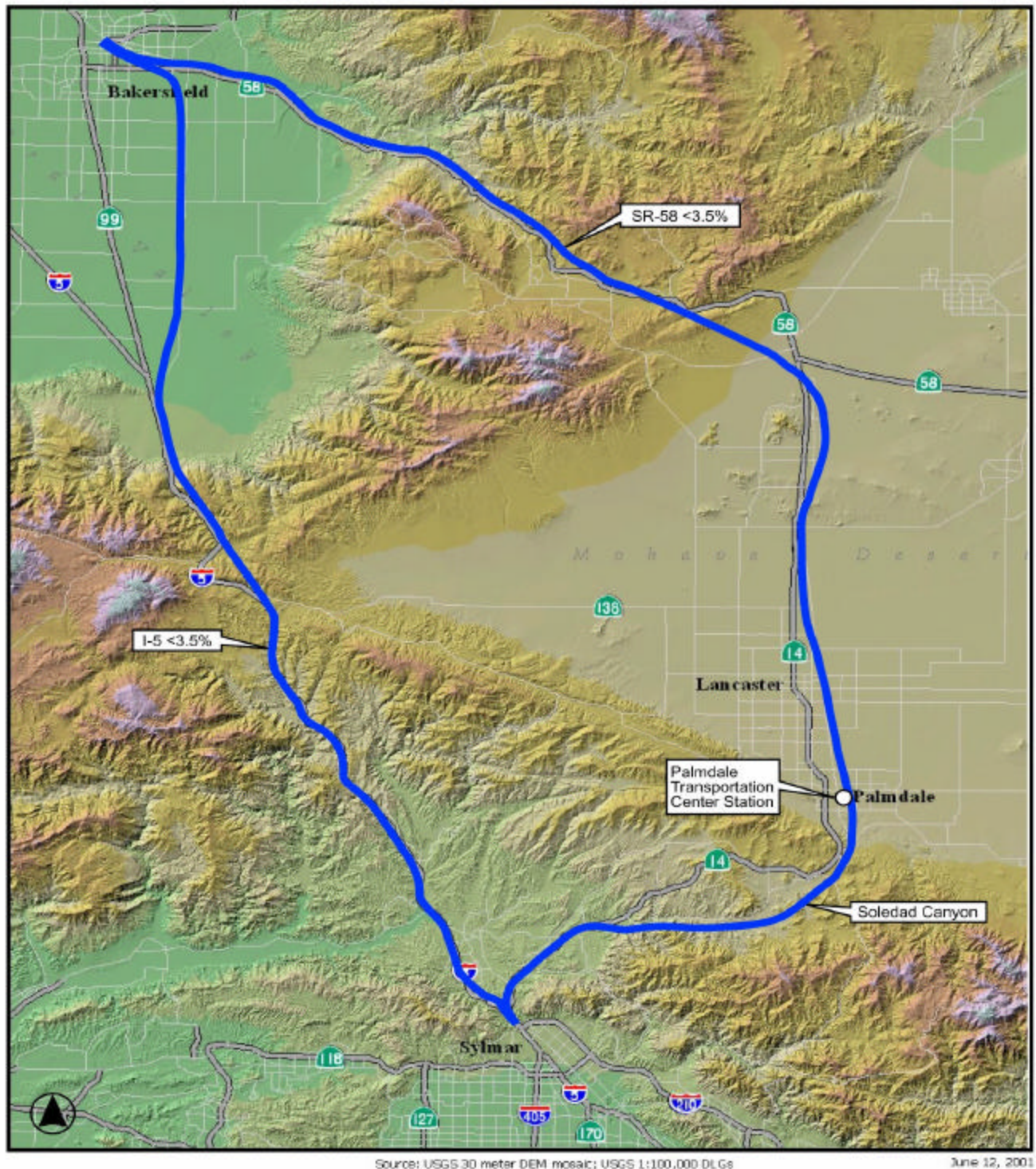
Legend

- | | | |
|-----------|-----------|-----------------|
| Option 1 | Option 2A | Option 4 |
| Option 1A | Option 3 | Option 4A |
| Option 2 | Option 3A | Station Options |

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Bakersfield-to-Los Angeles Segment: Proposed Alignment and Station Options

Figure 3-1



Legend

- Alignments to be Evaluated
- Station Locations to be Evaluated

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Alignments and Station Locations to be Evaluated Bakersfield-to-Sylmar Segment

Figure 3-2

Station Locations:

- **Antelope Valley (Palmdale Transportation Center):** This potential station would serve SR-58/Soledad Canyon alignment, maximizing the connectivity and accessibility while minimizing the impacts to social and economic and cultural resources.

3.1.2 Alignment and Station Location Options to be Eliminated (No Further Evaluation)

Based on information obtained through the initial evaluation, the following alignment and station location options are those recommended to be eliminated from further evaluation (see Figure 4):

Alignments:

- **I-5 (2.5% grade):** This alignment extends east along the Union Pacific Railroad (UPRR) from a Bakersfield station, south along State Route 184 (SR-184)/Wheeler Ridge Road, and generally follows I-5 over the Tehachapi Mountains through Santa Clarita to Sylmar.

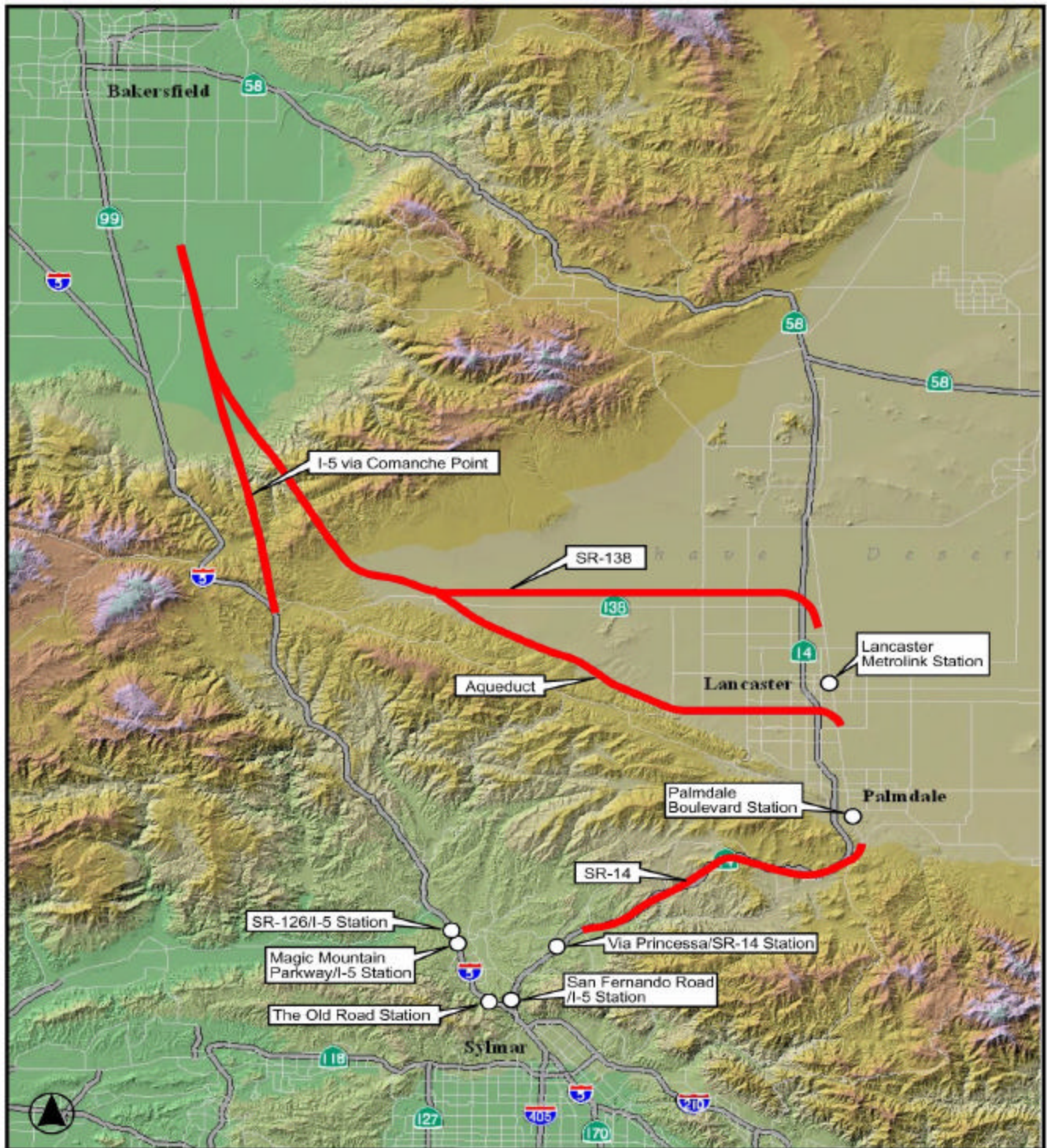
The I-5 at 2.5% grade alignment alternative has extensive tunneling, the highest capital costs of the I-5 alignments. This option does not allow the alignment to cross the San Andreas and the Garlock faults at-grade and would require a maximum single tunnel length of more than 33 miles.

- **I-5 via Comanche Point:** This alignment extends east along the Union Pacific Railroad (UPRR) from a Bakersfield station, south along State Route 184 (SR-184), then south-southeast to Comanche Point along an existing power easement, tunneling from Comanche Point and converging back with the I-5 alignment.

The I-5 via Comanche Point alignment crosses through a region of highly sheared and distorted rock between the San Andreas Fault and the Garlock Fault, crossing both faults in a deep tunnel. This alignment closely follows the existing California Aqueduct tunnel alignment through the Tehachapi Mountains, based on the experience in constructing that facility, tunneling through fractured rock would require slow drill-and-blast methods for long segments of the alignment. Because the area between the faults is highly sheared and unstable, an enlarged fault chamber could be required for the entire reach between the two faults. Additionally, within these limits, high volumes of groundwater would also likely be encountered in fractured rock.

- **SR-58/SR-14 (2.5% and 3.5% grade):** This alignment extends from Bakersfield along State Route 58 (SR-58) east from Bakersfield, generally following SR-58 through the Tehachapis to Mojave, along Metrolink/UPRR through Antelope Valley, diverging from Metrolink/UPRR south of Palmdale generally following SR-14 to Sylmar.

The SR-58/SR-14 at 2.5% grade alignment alternative has extensive tunneling, the highest capital costs, and does not allow the alignment to cross both the San Andreas and the Garlock faults at-grade. The SR-14 portion of the SR-58/SR-14 alignment passes through heavily developed and currently developing areas with the potential of constraining the expansion of the SR-14, which is currently the only direct route from the Antelope Valley to Santa Clarita and the Los Angeles basin. This alignment requires multiple crossings of the SR-14 freeway and the Santa Clara River creating significant visual impacts and adding to the cost of construction.



Legend

- Alignments to be Eliminated
- Station Locations to be Eliminated

Alignments and Station Locations to be Eliminated Bakersfield-to-Sylmar Segment

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Figure 3-3

- **SR-58/Soledad Canyon (2.5% grade):** This alignment extends from Bakersfield along State Route 58 (SR-58) east from Bakersfield, generally following SR-58 through the Tehachapis to Mojave, along Metrolink/UPRR through Antelope Valley and Soledad Canyon and generally following State Route 14 (SR-14) from Santa Clarita to Sylmar.

The SR-58/Soledad Canyon at 2.5% grade alignment alternative has extensive tunneling, the highest capital costs, and does not allow the alignment to cross both the San Andreas and the Garlock faults at-grade. This alternative would require 20 to 30 miles more tunneling than the SR-58/Soledad Canyon alternative at 3.5% grade.

- **SR-138/Soledad Canyon:** This alignment variation of the California Aqueduct corridor extends east along the UPRR from a Bakersfield station, south along SR-184, then south-southeast to Comanche Point along an existing power easement, tunneling under the Tehachapi mountains near the California Aqueduct, then veering to the east along SR-138 to the Metrolink/UPRR, through Soledad Canyon and generally following SR-14 from Santa Clarita to Sylmar.
- **SR-138/SR-14:** This alignment diverges from the Metrolink/UPRR, generally following SR-14 to Sylmar.

The SR-138/Soledad Canyon and SR-138/SR-14 alignments require deep tunneling through the Garlock Fault zone. As a result, the SR-138 alignment presents significantly higher construction costs and risks than the SR-58. The SR-58 alternative at a maximum 3.5% grade would allow for at-grade fault crossings for both major faults, shorter tunnels and significantly less tunneling, while providing the same service to Antelope Valley and virtually identical travel times from Bakersfield to Sylmar.

- **Aqueduct/Soledad Canyon:** This alignment extends east along the UPRR from a Bakersfield station, south along SR-184, then south-southeast to Comanche Point along an existing power easement, tunneling under the Tehachapi mountains near the California Aqueduct, generally following the Aqueduct to SR-14, through Soledad Canyon, and then generally following SR-14 from Santa Clarita to Sylmar.
- **Aqueduct/SR-14:** This variation of the Aqueduct corridor follows the same alignment as the Aqueduct/Soledad Canyon the exception is that this alignment generally follows SR-14 through the Antelope Valley to Sylmar.

These variations of the Aqueduct corridor closely parallel the San Andreas Fault for a long distance, creating a long segment subject to high seismic shaking and potential ground movement. Additionally these variations would have more environmental impacts, have a higher capital cost, and are less compatible with existing and planned development.

Station Locations:

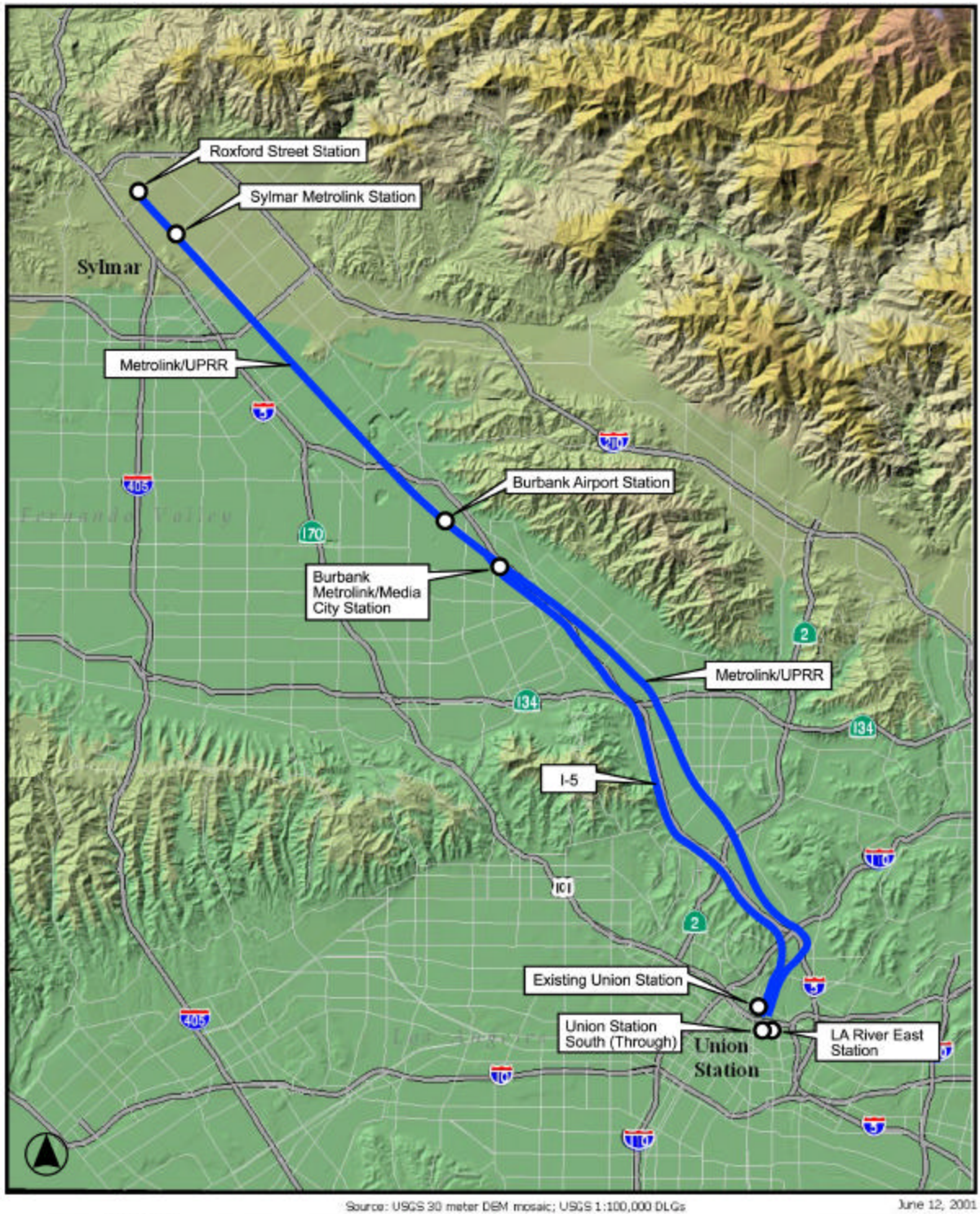
- **Santa Clarita (SR-126/I-5):** This station site lies immediately east of the SR-126/I-5 interchange in close proximity to the freeway-to-freeway interchange bridges and ramps which would require either an aerial or tunnel approach to the station site. A tunnel approach would require a widened tunnel with special ventilation and life safety systems and would present significant construction challenges. An overhead approach would require a structure that spans the existing interchange bridges and can accommodate the necessary crossovers and station tracks. Deep cuts/fills, drainage requirements, retaining walls and highway access requirements would also result in substantially higher station construction costs. This station site is located in an area affected, in part, by flooding from the Santa Clara River and is adjacent to an existing oil field that is designated as Mineral/Oil Conservation Area Open Space.

- **Santa Clarita (Magic Mountain Parkway):** This station site lies immediately north of a potential tunnel on the I-5 alignment. The proximity of the station platforms to the tunnel portal would have negative implications on the required configuration of the tunnel and the northerly tunnel portal. The station site would necessitate a widened tunnel cross-section to accommodate the crossovers and switching tracks to serve the platform tracks from the mainline tracks. This tunneling widening would require special ventilation and life safety considerations and would present significant construction challenges. The site is highly constrained by adjacent development and an existing oil field and there are several hazardous waste sites near the station location.
- **Santa Clarita (Via Princessa/SR-14):** This station site requires the widening of a tunnel at its north-easterly end to accommodate crossovers and switching tracks as well as a portion of the platform length. This configuration would require special ventilation and life safety considerations and would present significant construction challenges and high construction costs. In addition, this station location is in a high growth area that is currently being developed with commercial and residential uses. Significant new and planned development would be displaced by station facilities. The site is located on land designated for Residential Moderate and Community Commercial land uses in the County of Los Angeles General Plan and would be close to a planned school. There is no proposed or existing intermodal connection near this proposed station site. Via Princessa, a Major Highway planned for a minimum of 6 lanes, would have to be extended to accommodate access to this station site.
- **Santa Clarita (The Old Road):** This potential station site has no existing road access and is being considered for environmental conservation, thus resulting in higher environmental impacts and incompatibility with existing or planned development.
- **Santa Clarita (San Fernando Road/SR-14):** This potential station site has no existing road access and is within a National Forest, thus resulting in higher environmental impacts and incompatibility with existing or planned development.
- **Antelope Valley (Lancaster Metrolink Station):** This station site would be an aerial structure and therefore more costly to build than the Palmdale Transportation Center Station. It would also require modification to the existing Metrolink facility. Commercial and light industrial land uses adjacent to the track may be affected or displaced by station facilities. Sierra Highway and Lancaster Boulevard may need to be widened to accommodate traffic caused by the station. The proposed Palmdale Transportation Center would provide better connectivity due to its proximity to the Palmdale Airport, local and regional bus service and a planned Metrolink stop.

3.2 Sylmar-to-Los Angeles

3.2.1 Alignment and Station Location Options for Further Evaluation

Based on information obtained through the initial evaluation the following alignment and station location options are recommended for further evaluation (see Figure 3-4 and Figure 3-5):



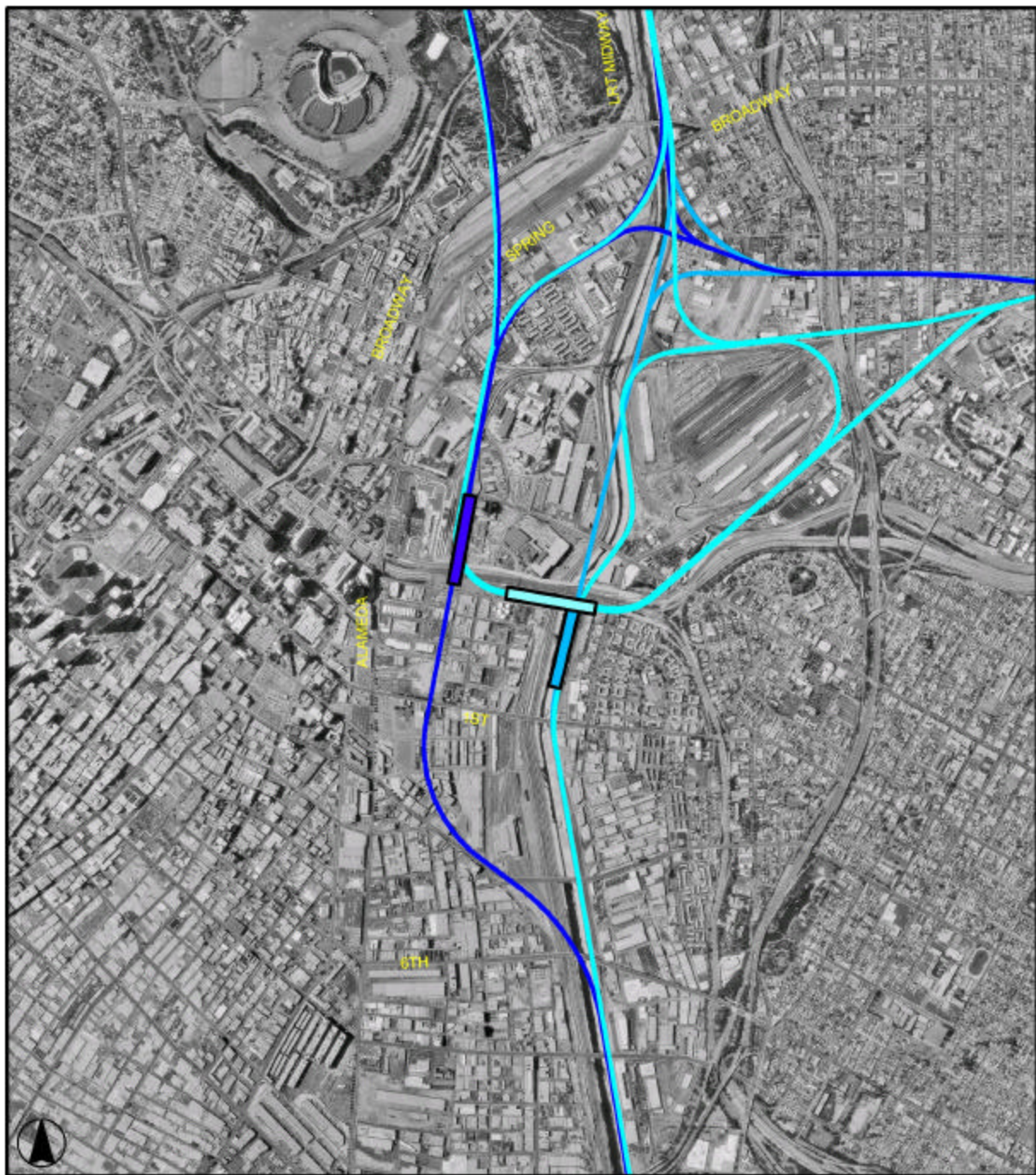
Legend

- Alignments to be Evaluated
- Station Locations to be Evaluated

**Alignments and Station Locations to be Evaluated
Sylmar-to-Union Station Segment**

Figure 3-8

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Source: USGS Orthophotoquads, 1994-1996

July 2001

Legend

-  Existing Union Station
-  LA River East
-  Union Stn South (Through)

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**Union Station
Locations to be Evaluated**

Figure 3-5

Alignments:

- **Metrolink/UPRR:** This alignment extends southeast generally following the Metrolink/UPRR between Sylmar and Los Angeles Union Station area. Station options along this alignment include Sylmar (Roxford Street and Sylmar Metrolink Station), Burbank (Burbank Airport and Burbank Metrolink Station) and the Los Angeles Union Station area (Existing Union Station, Union Station South (Through), and the LA River East)

The Metrolink/UPRR alignment option would be the least costly, since construction would be at grade between downtown Los Angeles and Burbank, and trenching the remainder of the alignment up to Sylmar would accommodate numerous grade crossings north of Burbank, however this option has the longest travel times. This alignment provides opportunities for incremental implementation of high-speed service, since it utilizes the existing railroad right-of-way. Additionally this alignment option has minimal environmental impacts and is compatible with existing and planned development. Further investigation of this alternative will examine options and opportunities to eliminate and/or minimize tight curves between Burbank and Los Angeles Union Station.

- **Combined I-5/UPRR:** This alignment extends southeast following the UPRR from Sylmar to Burbank Metrolink Station and then generally follows I-5 to a tunnel under Elysian Park to Los Angeles Union Station area. Station options along this alignment include Sylmar (Roxford Street and Sylmar Metrolink Station), Burbank (Burbank Airport and Burbank Metrolink Station) and the Los Angeles Union Station area (Existing Union Station and Union Station South (Through))

The Combined I-5/UPRR alignment offers the highest ridership and revenue potential and the fastest travel times. By following the straight Metrolink/UPRR corridor from Sylmar to Burbank and utilizing the I-5 corridor south of Burbank this allows the alignment to avoid the curvature of the railroad right-of-way resulting in fewer operating constraints. However, this alternative would be more costly, would require tunneling, would be less compatible with existing development, and have more impacts on the natural environment than the Metrolink/UPRR alignment.

Station Locations:

- **Sylmar (Roxford Street):** This potential station site is at the convergence of five major freeways (I-5, SR-14, I-210, I-405 and SR-118) and in close proximity to SR-170. Additionally, this site minimizes the impact to minority and low-income populations. This station site would serve both the Metrolink/UPRR and the Combined I-5/UPRR.
- **Sylmar (Sylmar Metrolink Station):** This potential station site is at the convergence of five major freeways (I-5, SR-14, I-210, I-405 and SR-118) and in close proximity to SR-170. Additionally, this site has greater connectivity and accessibility to other modes of transportation. This station site would serve both the Metrolink/UPRR and the Combined I-5/UPRR.
- **Burbank (Burbank Airport):** This potential station would serve both the Metrolink/UPRR and the Combined I-5/UPRR lines.
- **Burbank (Burbank Metrolink/Media Center):** This potential station would serve both the Metrolink/UPRR and the Combined I-5/UPRR lines.
- **Los Angeles Union Station (Existing Union Station):** This potential station site has the best connectivity to other transportation modes and avoids river impacts, and connects with UPRR/EI Monte/Colton alignment to the Inland Empire.

- **Los Angeles Union Station (Union Station South-Through):** This potential station has the best connections for the UPRR/EI Monte alignment to the Inland Empire, and connects to the LOSSAN and LAX corridor region.
- **Los Angeles Union Station (Los Angeles River-East):** This potential station location would serve the Metrolink/UPRR alignment and is compatible with existing/planned development, also would have lower capital costs, and connect with the LOSSAN corridor region.

3.2.2 Alignment and Station Location Options to be Eliminated (No Further Evaluation)

Based on information obtained through the initial evaluation, the following alignment and station locations options are recommended to be eliminated from further evaluation (see Figure 3-6 and Figure 3-7):

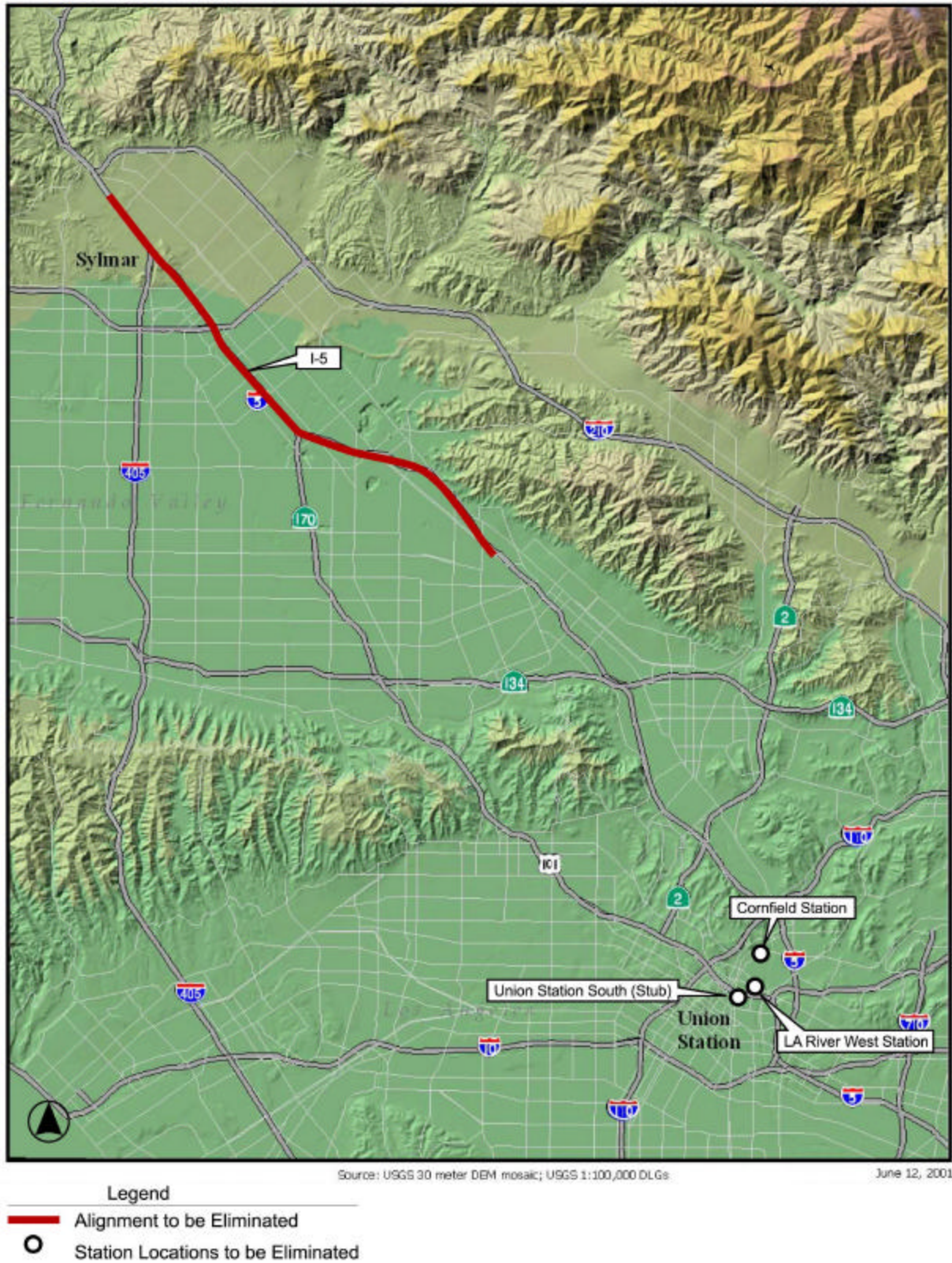
Alignments:

- **I-5 Freeway:** This alignment extends southeast generally following I-5 from Sylmar-to-Los Angeles Union Station area, but frequently diverges due to tight highway curvature that would severely compromise operating speed.

Although the I-5 alignment would have the fastest travel times, it has the most environmental impacts. Due to the tight curvature of the freeway, the alignment would diverge from I-5 frequently resulting in extensive land use impacts and substantial right-of-way acquisition in heavily urbanized areas. Therefore, this alignment would have severe impacts on social and economic resources as well as being incompatible with the existing development. The I-5 alignment option would be the most costly since it involves substantial right-of-way and property acquisition, tunneling and significant use of aerial structures, with many sections of multilevel structures required to pass over existing overpasses and connector ramps.

Station Locations:

- **Los Angeles Union Station (Union Station South-Stub):** This station site is less compatible with local land use plans because it may conflict with the proposed Eastside LRT Extension. It is also in a more sensitive cultural/historical resources area. Additionally, it would not allow for through services other than for LAX to Inland Empire or San Diego connections.
- **Los Angeles Union Station (Los Angeles River-West):** This station site would displace an existing MTA bus yard being considered as a maintenance yard site for the Eastside LRT Extension. Additionally, with the County Jail complex and law enforcement center between the site and Patsouras Transit Plaza, it would make pedestrian connections to other modes of transportation problematic.
- **Los Angeles Union Station (Cornfield Site):** This station site has the lowest connectivity, slow approach speeds, does not connect to Combined I-5/UPRR alignment, has congested approaches from the stand point of railroad operations and topography, significant aerial structure requirements, and poor arterial access. It also suffers from a fatal flaw because it is located on a controversial site proposed for park development and included in the LA River Greenbelt planning effort.



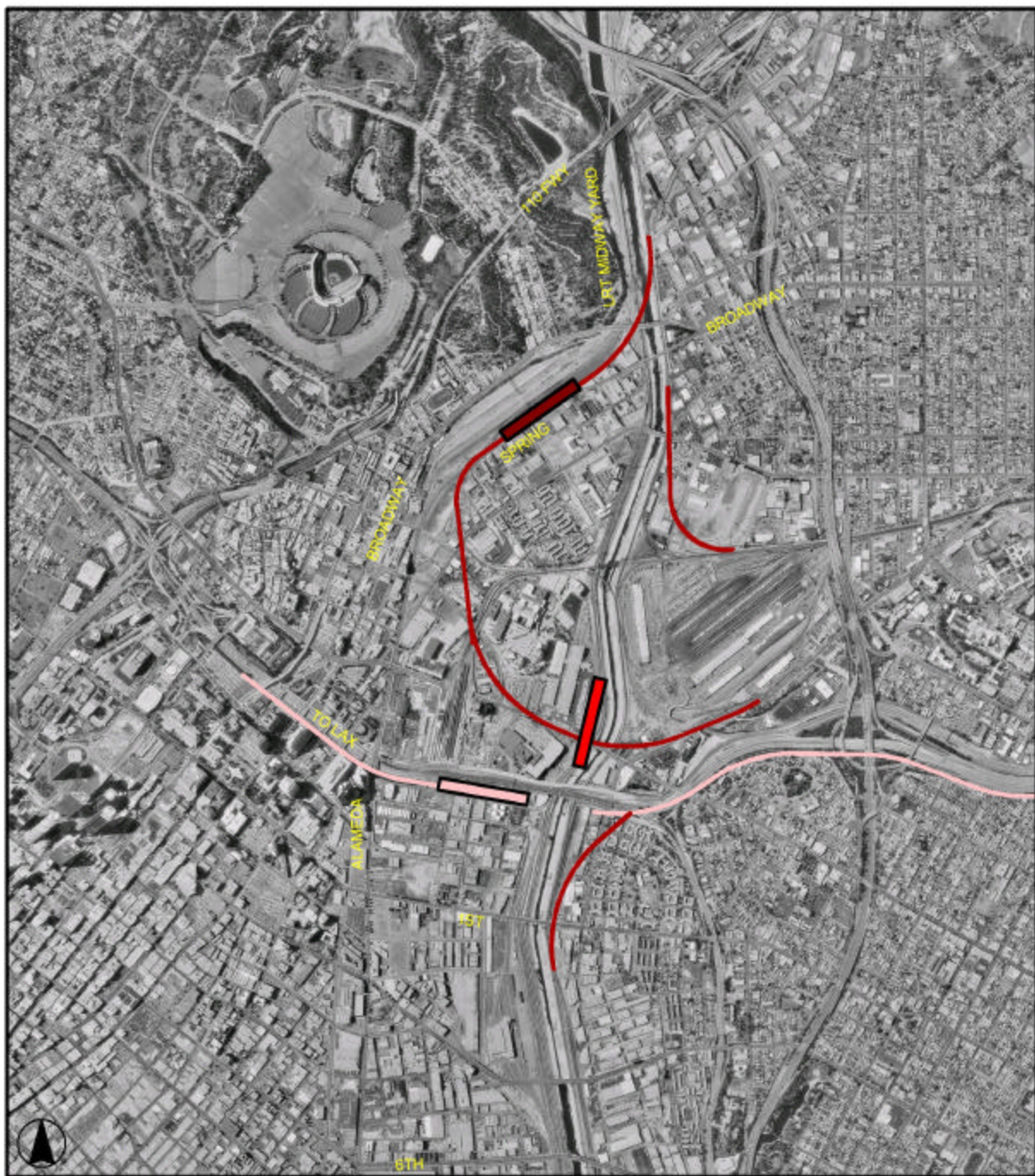
**Alignment and Station Locations to be Eliminated
Sylmar-to-Union Station**

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U.S. Department
of Transportation
**Federal Railroad
Administration**

Figure 3-6



Source: USGS Orthophotoquads, 1994-1996

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- Legend
- Cornfield Site
 - LA River West
 - Union Stn South (Stub)

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**Union Station
Locations to be Eliminated**

Figure 3-7